1. (Amended) A wavelength-locked loop servo-control circuit that enables real time mutual alignment of an electromagnetic signal having a peaked spectrum function including a center wavelength and a wavelength selective means for implementing a peaked passband function including a center wavelength, in a system employing electromagnetic waves, said circuit comprising:

means for applying a dither modulation signal at a dither modulation frequency to said electromagnetic signal to generate a dither modulated electromagnetic signal, and inputting said dither modulated electromagnetic signal to said wavelength selective means;

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means for converting a portion of said dither modulated electromagnetic signal to an electric feedback signal;

means for generating an error signal comprising a vector cross product of said feedback signal and said dither modulation signal; and

means for adjusting the peak spectrum function of said electromagnetic signal according to said error signal, wherein said center wavelength of said electromagnetic signal becomes aligned with said center wavelength of said wavelength selective means when a frequency characteristic of said feedback signal is two times said dither modulation frequency.

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11. (Amended) The wavelength-locked loop servo-control circuit as claimed in Claim 7, wherein said means for generating an error signal comprising a vector cross product includes a mixer capable of combining said converted feedback signal with said sinusoidal dither modulation signal and generating a vector cross-product signal having components representing a sum and difference at dither frequencies.

18. (Amended) A wavelength-locked loop servo-control circuit that enables real time mutual alignment of an electromagnetic signal having a peaked spectrum function including a center wavelength and a tunable wavelength selective means for implementing a peaked passband function including a center wavelength, in a system employing electromagnetic waves, said circuit comprising:

means for applying a dither modulation signal at a dither modulation frequency to said tunable wavelength selective means, said tunable wavelength selective means further receiving an electromagnetic signal having a center wavelength and generating a dither modulated optical signal for output thereof;

means for converting a portion of said dither modulated electromagnetic signal to an electric feedback signal;

means for generating an error signal comprising a vector cross product of said feedback signal and said dither modulation signal; and

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means for adjusting a passband center wavelength of said tunable wavelength selective means according to said error signal, wherein said center wavelength of said electromagnetic signal becomes aligned with said center wavelength of said tunable wavelength selective means when a frequency characteristic of said feedback signal is two times said dither modulation frequency.

21. (Amended) A method for mutually aligning a center wavelength of an electromagnetic signal having a peaked spectrum function with a center wavelength of a wavelength selective means for implementing a peaked passband function including a center wavelength, in a system employing electromagnetic waves, said method comprising the steps of:

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a) applying a dither modulation signal at a dither modulation frequency to said electromagnetic signal operating at a specific wavelength, and inputting said dither modulated electromagnetic signal to said wavelength selective means having a peak frequency response at a desired wavelength;

b) converting a portion of said dither modulated electromagnetic signal to an electric feedback signal;

c) generating an error signal comprising a vector cross product of said feedback signal and said dither modulation signal; and

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A4 cont'd

d) adjusting the peak spectrum function of said electromagnetic signal according to said error signal, wherein said center wavelength of said electromagnetic signal becomes aligned with said center wavelength of said wavelength selective means when said frequency characteristic of said feedback signal is two times said dither modulation frequency.

25. (Amended) The method as claimed in Claim 21, wherein said generating step c) includes the steps of:

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combining said converted feedback signal with said dither modulation signal and generating a vector cross-product signal having components representing a sum and difference at dither frequencies.

filtering said output cross-product signal; and

averaging said output cross-product signal to generate said error signal, said error signal being positive or negative depending on whether a center wavelength of said electromagnetic signal is respectively less than or greater than said desired wavelength of said wavelength selective device.

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28. (Amended) A method for mutually aligning a center wavelength of an electromagnetic signal of having a peaked spectrum function with a center wavelength of a wavelength

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selective means for implementing a peaked passband function including a center wavelength, in a system employing electromagnetic waves, said method comprising the steps of:

a) applying a dither modulation signal at a dither modulation frequency to said tunable wavelength selective device, said tunable wavelength selective means further receiving an electromagnetic signal having a center wavelength and generating a dither modulated electromagnetic signal for output thereof;

b) converting a portion of said dither modulated electromagnetic signal to an electric feedback signal;

c) generating an error signal comprising a vector cross product of said feedback signal and said dither modulation signal; and

d) adjusting a passband center wavelength of said tunable wavelength selective means according to said error signal, wherein said center wavelength of said electromagnetic signal becomes aligned with said center wavelength of said tunable wavelength selective means when said frequency characteristic of said feedback signal is two times said dither modulation frequency.

30. (Amended) A servo-control circuit for tuning a laser signal generator providing an optical signal at a specified wavelength in an optical system, said optical system including a bandpass

filter means for receiving and transmitting optical signals in said optical system at a desired wavelength, said servo-control system comprising:

means for applying a bias signal to said laser signal generator for tuning said optical signal to a specific wavelength;

means for applying a dither modulation to said bias signal to produce a dither modulated optical signal, said dither modulated optic signal being input to said bandpass filter means;

detector means for receiving said dither modulated optical signal output from said bandpass filter means and converting said received optical signal into an electrical feedback signal; and,

means for generating an error signal comprising a vector cross product of said converted feedback signal and a dither modulation signal, said error signal responsively modifying the bias signal until a frequency characteristic of said converted feedback signal is two times a dither modulation frequency, whereby at such time said wavelength of said optical signal exactly matches the desired wavelength of said bandpass filter means.

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35. (Amended) The servo-control circuit for tuning a laser signal generator as claimed in Claim 30, wherein said means for generating an error signal includes:

a mixer capable of combining said converted feedback signal with said dither modulation signal and generating a vector cross-product signal having components representing a sum and difference at dither frequencies;

a low-pass filter device for filtering said output cross-product signal; and

an integrator circuit for averaging said output cross-product signal to generate said error signal, whereby said error signal is positive or negative depending on whether a center wavelength of said optical signal is respectively less than or greater than said desired wavelength of said bandpass filter means.

37/38. (Amended) A servo-control circuit for tuning a tunable wavelength selective means for receiving and transmitting optical signals of a desired wavelength in an optical system, said servo-control system comprising:

means for applying a dither modulation signal at a dither modulation frequency to said tunable wavelength selective means, said tunable wavelength selective means further receiving said optical signal having a center wavelength and generating a dither modulated optical signal for output thereof;

means for converting a portion of said dither modulated optical signal to an electric feedback signal;

means for generating an error signal comprising a vector cross product of said feedback signal and a dither modulation signal; and

A9 cont'd

means for adjusting a passband center wavelength of said tunable wavelength selective means according to said error signal until a frequency characteristic of said converted feedback signal is two times said dither modulation frequency, whereby at such time said desired wavelength of said tunable wavelength selective means exactly matches a wavelength of said input optical signal.

38 40. (Amended) A method for tuning a laser signal generator providing an optical signal at a specified wavelength in an optical system, said optical system including a bandpass filter means for receiving and transmitting optical signals in said optical system at a desired wavelength, said method comprising the steps of:

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a) applying a bias signal to said laser signal generator for tuning said optical signal to a specific wavelength;

b) applying a dither modulation to said bias signal to produce a dither modulated optical signal, said dither modulated optic signal being input to said bandpass filter means;

c) converting said received optical signal into an electrical feedback signal; and,

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A10 cont'd

d) generating an error signal comprising a vector cross product of said converted feedback signal and a dither modulation signal, said error signal responsively modifying the bias signal until a frequency characteristic of said converted feedback signal is two times said dither modulation frequency, whereby at such time said wavelength of said optical signal exactly matches the desired wavelength of said bandpass filter means.

39/42. (Amended) The method for tuning a laser signal generator as claimed in Claim 38, wherein said generating step d) includes the steps of:

combining said converted feedback signal with said dither modulation signal and generating a vector cross-product signal having components representing a sum and difference at dither frequencies.

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filtering said output cross-product signal; and

averaging said output cross-product signal to generate said error signal, said error signal being positive or negative depending on whether a center wavelength of said optical signal is respectively less than or greater than said desired wavelength of said wavelength selective device.

Please add new Claims 45-51

42 ~~45.~~ (New) The wavelength-locked loop servo-control circuit as claimed in Claim 1, wherein said error signal is a continuous bi-polar error signal function capable of being adjusted positive or negative for driving said center wavelength of said electromagnetic signal respectively less than or greater than said center wavelength of said wavelength selective means according to a desired application.

43 ~~46.~~ (New) The wavelength-locked loop servo-control circuit as claimed in Claim 18, wherein said error signal is a continuous bi-polar error signal function capable of being adjusted positive or negative for driving said center wavelength of said tunable wavelength selective means respectively less than or greater than said center wavelength of said electromagnetic signal according to a desired application.

44 ~~47.~~ (New) The method as claimed in Claim 21, wherein said error signal is a continuous bi-polar error signal function capable of being adjusted positive or negative for driving said center wavelength of said electromagnetic signal respectively less than or greater than said center wavelength of said wavelength selective means according to a desired application.

45 ~~48.~~ (New) The method as claimed in Claim 28, wherein said error signal is a continuous bi-polar error signal function capable of being adjusted positive or negative for driving said center wavelength of said tunable wavelength selective means respectively less than or greater than said center wavelength of said electromagnetic signal according to a desired application.